

Claims

1. Recording method for recording the status of an
artificially ventilated lung of a patient in
5 accordance with a plurality of lung positions, the
patient lying in a nursing bed and the position of the
artificially ventilated lung is moveable by a position
actuator, comprising the steps of:
 - 10 a) moving the artificially ventilated lung by the
position actuator to a defined lung position,
 - b) determining the status of the artificially
ventilated lung, and
 - 15 c) recording the status of the artificially
ventilated lung in accordance with the defined
lung position.
- 20 2. Recording method according to claim 1, wherein the
nursing bed is rotatable around its longitudinal axis
and wherein the position actuator is a motor rotating
the nursing bed around its longitudinal axis.
- 25 3. Recording method according to claim 1, wherein the
position actuator comprises air cushions provided
underneath the patient.
4. Recording method according to one of the claims 1 - 3,
30 wherein the defined lung position is reached by a
predetermined step size of the position actuator.
5. Recording method according to one of the claims 1 - 3,
wherein the defined lung position is reached in

accordance with a feed back signal of a position sensor measuring the actual lung position.

- 5 6. Recording method according to one of the claims 1 - 5, wherein the status of the artificially ventilated lung is a measure of a regional or a global information on lung morphology and/or lung function.
- 10 7. Recording method according to one of the claims 1 - 5, wherein the status of the artificially ventilated lung is a measure of the functionality with regard to the global gas exchange of the lung.
- 15 8. Recording method according to one of the claims 1 - 7, wherein the determined status of the artificially ventilated lung is recorded by a computer in accordance with the corresponding defined lung position.
- 20 9. Recording method according to one of the claims 1 - 8, wherein the steps a), b), and c) are repeated with a predetermined differential step size of the position actuator until the status of the artificially ventilated lung has been determined over a
25 predetermined range of lung positions.
- 30 10. Controlling method for controlling at least one ventilation pressure of an artificial ventilator for ventilating an artificially ventilated lung of a patient in accordance with a plurality of lung
35 positions, the patient lying in a nursing bed and the position of the artificially ventilated lung is moveable by a position actuator, comprising the steps of:

- 5 a) obtaining lung status information which is based
on at least two supporting points of a first
status of the artificially ventilated lung in
accordance with a first lung position and a
second status of the artificially ventilated lung
in accordance with a second lung position,
- 10 b) moving the artificially ventilated lung by the
position actuator to a defined lung position,
- c) controlling of at least one ventilation pressure
in accordance with the defined lung position and
in accordance with the lung status information
related to said defined lung position.
- 15 11. Controlling method according to claim 10, wherein the
lung status information is obtained by applying the
recording method according to claim 9.
- 20 12. Controlling method according to one of the claims 10 -
11, wherein the lung status information is
interpolated between the supporting points in
accordance with the difference between two
neighbouring supporting points.
- 25 13. Controlling method according to one of the claims 10 -
12, wherein at least one ventilation pressure is
controlled such that the lung status information
yields a homogeneous distribution over a plurality of
30 lung positions.
14. Positioning method for controlling the change of the
position of an artificially ventilated lung of a
patient, the patient lying in a nursing bed and the
35 position of the artificially ventilated lung is

changeable by a corresponding position actuator,
comprising the steps of:

- 5 a) providing a periodical controlling signal having
a distribution of a plurality of position periods
and/or of a plurality of amplitudes,
- b) controlling the position actuator by said
periodical controlling signal.
- 10 15. Positioning method according to claim 14, wherein the
distribution is compiled via a user's interface on the
basis of a given set of periodical controlling
signals.
- 15 16. Positioning method according to claim 14, wherein the
distribution is compiled in accordance with lung
status information which is based on at least two
supporting points of a first status of the
20 artificially ventilated lung in accordance with a
first lung position and a second status of the
artificially ventilated lung in accordance with a
second lung position.
- 25 17. Recording apparatus for recording the status of an
artificially ventilated lung of a patient lying in a
nursing bed in accordance with a plurality of lung
positions, comprising:
- 30 a) a position actuator for moving the artificially
ventilated lung to a defined lung position,
- b) determining means for determining the status of
the artificially ventilated lung, and
- 35

- c) recording means for recording the status of the artificially ventilated lung in accordance with the defined lung position.

- 5 18. Recording apparatus according to claim 17, wherein the nursing bed is rotatable around its longitudinal axis and wherein the position actuator is a motor rotating the nursing bed around its longitudinal axis.
- 10 19. Recording apparatus according to claim 17, wherein the position actuator comprises air cushions provided underneath the patient.
- 15 20. Recording apparatus according to one of the claims 17 - 19, wherein the defined lung position is reached by a predetermined step size of the position actuator.
- 20 21. Recording apparatus according to one of the claims 17 - 19, wherein the defined lung position is reached in accordance with a feed back signal of a position sensor measuring the actual lung position.
- 25 22. Recording apparatus according to one of the claims 17 - 21, wherein the status of the artificially ventilated lung is a measure of a regional or a global information on lung morphology and/or lung function.
- 30 23. Recording apparatus according to one of the claims 17 - 21, wherein the status of the artificially ventilated lung is a measure of the functionality with regard to the global gas exchange of the lung.
- 35 24. Recording apparatus according to one of the claims 17 - 23, wherein the determined status of the artificially ventilated lung is recorded by a computer

in accordance with the corresponding defined lung position.

25. Recording apparatus according to one of the claims 17
5 - 24, wherein a predetermined differential step size is applied repeatedly to the position actuator until the status of the artificially ventilated lung has been determined over a predetermined range of lung positions.
- 10 26. Controlling apparatus for controlling at least one ventilation pressure of an artificial ventilator for ventilating an artificially ventilated lung of a patient lying in a nursing bed in accordance with a
15 plurality of lung positions, comprising:
- a) means for obtaining lung status information which is based on at least two supporting points of a first status of the artificially ventilated lung
20 in accordance with a first lung position and a second status of the artificially ventilated lung in accordance with a second lung position,
 - b) a position actuator for moving the artificially
25 ventilated lung to a defined lung position,
 - c) means for controlling of at least one ventilation pressure in accordance with the defined lung position and in accordance with the lung status
30 information related to said defined lung position.
27. Controlling apparatus according to claim 26, wherein
35 the lung status information is obtained by using the recording apparatus according to claim 25.

28. Controlling apparatus according to one of the claims
26 - 27, wherein the lung status information is
interpolated between the supporting points in
accordance with the difference between two
neighbouring supporting points.
29. Controlling apparatus according to one of the claims
26 - 28, wherein at least one ventilation pressure is
controlled such that the lung status information
yields a homogeneous distribution over a plurality of
lung positions.
30. Positioning apparatus for controlling the change of
the position of an artificially ventilated lung of a
patient lying in a nursing bed, comprising:
- a) a position actuator for changing the position of
the artificially ventilated lung,
 - b) means for providing a periodical controlling
signal having a distribution of a plurality of
position periods and/or of a plurality of
amplitudes, and
 - c) means for controlling the position actuator by
said periodical controlling signal.
31. Positioning apparatus according to claim 30, wherein
the distribution is compiled via a user's interface on
the basis of a given set of periodical controlling
signals.
32. Positioning apparatus according to claim 30, wherein
the distribution is compiled in accordance with lung

status information which is based on at least two
supporting points of a first status of the
artificially ventilated lung in accordance with a
first lung position and a second status of the
5 artificially ventilated lung in accordance with a
second lung position.